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AUTHOR Schliesman, Terry; Ayres, Joe
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ABSTRACT

This study was conducted to determine if time spent using the computer was related to communication apprehension (CA) and self-perceived communication competence (SPCC) among high school students. To this end, an ex post facto design was employed. Subjects were 534 students from a West-Coast school district. Results indicated that students' self-reported computer time use did not correlate significantly and/or substantially with levels of communication apprehension or communication competence. Among other things, these findings suggest that use of computers are not as socially threatening as some scholars believe. (Contains 20 references.) (Author/RS)

The Relationship Between Computer Time and Communication Apprehension/Communication Competence Among Adolescents

by

Terry Schliesman

and

Joe Ayres

Terry Schliesman (Ph.D., Washington State University, 1998) is an Assistant Professor of Communication at Western State College of Colorado. Joe Ayres (Ph.D., University of Utah, 1970) is a Professor in the School of Communication at Washington State University.

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Abstract

This study was conducted to determine if time spent using the computer was related to communication apprehension (CA) and self-perceived communication competence (SPCC) among high school students. To this end, an ex post facto design was employed. Results indicated that students' self-reported computer time use did not correlate significantly and/or substantially with levels of communication apprehension or communication competence. Among other things, these findings suggest that use of computers are not as socially threatening as some scholars believe.

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As the computer becomes a more ubiquitous object, society is bound to change in fundamental ways. But much of what is written or said about the transition into the information age is overflowing with excitement, passion and a sense of utopia. While it is easy to get caught up in the thrill of inventing and implementing new gadgets, it is also wise to evaluate and question a wide variety of changes our society is experiencing as computerization occurs.

One field that has experienced significant changes because of computerization is education. Students, along with their parents, expect schools to offer hands-on computer experiences, which poses ongoing opportunities (and challenges) for school officials. Seemingly, as a result, there have been a variety of ways in which the students have been impacted by information technology. In addition to learning differently, students interact differently. Their socialization processes have been altered. However, very little research has been done to assess the impact of computer use on students. This study investigated how particular communication skills correlated with varying levels of computer use among students.

There is much excitement about the use of microcomputers in education. Years ago, computers were more of an add-on to regular instruction, especially in K-12. But after a long process, many modern classrooms offer microcomputers as an integral part of the curriculum. Recent surveys report that nearly 98 percent of the American elementary and secondary schools used microcomputers during the 1993-94 school year. In that same period, there were 11 students per microcomputer. By comparison, just ten years ago, 78 percent of the American elementary and secondary schools had microcomputers but there were 63 students per microcomputer (U.S. Bureau of Census, 1996).

The U.S. Office of Technology Assessment conducted one of the most recent investigations on technology in the classroom (O'Neil, 1995). The report suggests 5.8 million computers are now in U.S. schools for instruction, which works out to one computer for every nine students. Not surprisingly, computers are used at all levels of education for many purposes. Of course some schools are reluctant to include computerization in the curriculum (Hudas, 1996). Nonetheless, computers are being used in mathematics, English and social studies, computer-assisted instruction (CAI) is used in music, biology, foreign languages, geography, student publications, and more (Bitter, Camuse, and Durbin, 1993; Carney, 1996; Feil, 1995). With the advent of modems and network infrastructure lines, classrooms with computers have been able to reach outside the physical school building. According to The National Center on Education Statistics, 65 percent of the nation's schools had been connected to the Internet by 1996 (Benton Foundation, 1996), which was nearly a 100 percent increase over the portion of schools connected in 1994 (35 percent). Furthermore, all but 5 percent of the schools are to be connected by the year 2000. It is important to add that, by 1996, only 14 percent of all the nation's classrooms were hooked-up to the Internet, suggesting that only a handful of rooms at any one school are capable of offering telecomputing experiences.

With the prevalence of computers in schools, one question scholars have been asking is, how are students being impacted cognitively by computers? (See Rist, 1991.) In response to that question, Riel (1995) suggests that students who have participated in Learning Circles, a telecomputing program that connects classrooms from around the globe, experience an increase of ability in the following areas:

- Students who were involved with peers in cross-classroom collaboration showed a marked increase in writing motivation and performance as assessed by pencil and paper self-reports.
- Seeing the world from the perspective of others.
- Increased multi-cultural understanding.
- Cooperative patterns for tackling problems and issues.
- Increased teacher professionalism.

Schofield (1995) also provides data on the cognitive impacts of technology. After studying the use of computers for two years at an East Coast high school, she found (1) teachers were able to increase the variety of sources of information available to students; (2) teachers became less authoritarian and more collaborative; (3) teachers spent longer periods of time offering individualized help; and finally (4) teachers graded differently since students' grades were now based, in part, on effort or time spent on computers.

Overall, Schofield argues that the computer increases the student's level of excitement and motivation for learning because it is a novel experience, it is a stimulating replacement for lecturing, and it provides immediate feedback on performance. Along the same lines, Cuban (1994) points out that computers have a pinball effect because computers are audiovisually stimulating, like pinball machines, they attract users. Consequently students might be motivated toward learning in general. Cuban (1994) also talks about how computer technology has affected learning and understanding among students through drill, problem solving and interaction (i.e. collaborating with others on a computer project). Moreover, Turkle (1984) argues that the computer helps kids development of self which in turn impacts their socialization processes.

Contrary to these positive outcomes, a group of scholars suggested that interacting with on-line services like the Internet was associated with "declines in participants communication with family members in the household, declines in the size of their social circle, and increases in their depression and loneliness" (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, and Scherlis, p. 1017, 1998). This indicates that interactions with the computer can impede social development. Of course, it should be pointed out that the computer is being used differently (collaboratively vs. non-collaboratively, respectively) in these studies.

Given the variety of research that has been done on social impacts of computer use, it is surprising to find that no scholar has investigated the relationship between time

spent computer use and communication. For example, as students spend more time with the computer, does their apprehension of communicating with others face-to-face increase? Do they perceive themselves as more competent speakers?

Building on the research of Kraut et. Al. (1998), the purpose of the present investigation was to examine whether, among high school students, time spent using the computer was linked to increases in communication apprehension. Similarly, was computer use linked to decreases in self-perceived communication competence? The concept of communication competence concern's a person's self-perceived ability to communicate successfully in various situations (McCroskey & McCroskey, 1988). Also, the term communication apprehension (CA) refers to certain levels of apprehension or fear associated with real or anticipated communication with others in various environments (McCroskey, 1977). If high levels of computer use strongly correlate with subjects' CA, it seems likely high levels of computer use will also strongly correlate with communication competence (but in the opposite direction). Thus, these two concepts—communication competence and CA—directly relate to the assessment of a person's oral communication and necessarily are included in this study. (The instruments that operationalize these concepts are explained below.) So with respect to the above literature, the following hypothesis was advanced:

H: Students' level of computer time will significantly and substantially correlate with CA (positively) and with communication competence (negatively).

Methodology

Participants

Students who participated in this study were recruited from the Justice School District, west coast junior and senior high schools with student populations of 600 and 800, respectively. The two schools are located in a moderate-sized town (population 20,000). Specifically, the study involved 96 seventh graders (f=51, m=45), 180 eighth-graders (f=98, m=82), 133 ninth-graders (f=71, m=62), and 125 tenth-graders (f=65, m=60). In total, 534 students (285 male and 249 female) participated from Justice School

District. In contrast to nearby districts, Justice is considered "low-tech". However, a recent government grant furnished the junior and senior high schools' classrooms with powerful Macs that offer multi-media and on-line capabilities. Accordingly, Justice school teachers were advised by district administrators to alter class instructions so as to increase computer time among students.

Data Gathering

For this study, students enrolled in computer-oriented classes (science, math, biology, etc.) were asked to fill out a series of pretests at the beginning of the semester. The students filled out the Personal Report of Communication Apprehension-24 (McCroskey, 1970), a self-perceived communication competence scale (McCroskey & McCroskey, 1988) and a Report of Collaboration in a Computer Environment (Schliesman, 1998). These instruments will be described in more detail later. After the student had interacted with the new technology for ten weeks, they filled out the same instruments for the posttest.

To determine whether time on the computer was related to PRCA and SPCC scores, students' pretest scores on the RCCE were correlated with their scores on the SPCC and PRCA instruments. A similar set of correlations were computed for students' posttest results.

Instruments

PRCA. The Personal Report of Communication Apprehension-24 (PRCA-24) is the most popular method for measuring communication apprehension (McCroskey, 1970). The PRCA is a 24-item Likert-type scale with a 5-point response format anchored by strongly agree and strongly disagree. The PRCA was designed to measure "trait" CA in four communication contexts: dyadic, group, meeting, and public speaking. The scale consists of four subscales, each measuring respondents' CA in a particular context, that can be summed to measure the more global CA construct. The PRCA was selected for its strong validity and reliability. Internal reliability estimates for the scale have ranged

from .92 to .96. Test-retest reliability (N=762) over a seven week period was .82 (McCroskey, 1978). For the data collected in this study, the overall coefficient alpha reliability for all 24 items (N=529) was .81. The PRCA was chosen because of its popularity among communication apprehension scholars, reliability, validity, and ease of administration.

SPCC. The Self-Perceived Communication Competence scale was used to collect data on a student's personal belief of her or his ability to communicate (McCroskey & McCroskey, 1988). The instrument focuses on twelve communication situations. For example, "Present a talk to a group of friends." The SPCC then asks students how competent they are in these twelve situations. Acceptable levels of reliability and validity have been demonstrated with this scale by McCroskey and McCroskey (1988). For the data collected in this study, the overall coefficient alpha reliability for the 12 items (N=527) was .89.

RCCE The assessment of computer time among students was accomplished with the Report of Collaboration in a Computer Environment (RCCE), which is a six-item instrument that asks students how much time they spend working on a computer, either at school or elsewhere. These questions concerned how much time students spent working with computers at home, in school and in other locations. Students also reported how often they worked alone or with others on the computer. The three contexts of home, school and other locations were chosen because it was apparent from qualitative pilot studies that those areas primarily account for where students work on the computer. Test-retest reliability (N=20) over a one week period for overall computer time, computer time at home, computer time at school, and computer time other than at school or home was .84, .82. .50, and .87, respectively ($p \leq .05$ for all correlations). Since the test retest reliability of the home subscale of the RCCE was relatively low, analysis in this investigation were restricted to the overall scale which had a very respectable level of reliability.

Analysis

This study employed an ex post facto design. The RCCE data were correlated with the PRCA and SPCC for the pre and posttest data, respectively, using Pearson Product Moment correlations.

Results

The Pearson Product Moment correlations for the relationship between the RCCE and the SPCC, ranged from -.02 (r^2 = .0004) to -.13 (r^2 = .0169) on the pre and posttests. These correlations were statistically significant but not particularly meaningful since the largest correlation only accounts for little more than one percent of the variance in SPCC scores. The correlations between the RCCE and the PRCA ranged from -.08 (r2 = .0064) to .05 (r2 = .0025) on the pre and posttests. Again, these correlations were significant but not substantial since the strongest correlation only accounts for less than one percent of the variance in PRCA scores. A complete set of correlations is presented in Table 1.

Table 1. Correlation Coefficients

	Pre PRCA	Post PRCA	Pre SPCC	Post SPCC	Pre RCCE	Post RCCE
Pre PRCA	1.0000	.4330* (r^2 = .19)	-.2732* (r^2 = .07)	-.2941* (r^2 = .09)	-.0897* (r^2 = .01)	-.0310 (r^2 = .00)
Post PRCA		1.0000	-.4848* (r^2 = .24)	-.5937* (r^2 = .35)	.0519 (r^2 = .00)	.0943 (r^2 = .01)
Pre SPCC			1.0000	.4484* (r^2 = .20)	-.1309* (r^2 = .02)	-.1378* (r^2 = .02)
Post SPCC				1.0000	-.0263 (r^2 = .00)	-.1108* (r^2 = .01)
Pre RCCE					1.0000	.6057* (r^2 = .37)
Post RCCE						1.0000

* P <.05

Discussion

Contrary to what was predicted, no highly significant, substantial relationships between the frequency of computer use among students and their attitudes toward CA and communication competence emerged in this investigation. Apparently, level of computer use is not associated with CA or communication competence. This would suggest that working on the computer is not a problem in these regards.

However, an alternative explanation is that computer time may be a way to minimize face-to-face interaction and keep CA in check. Greene and Sparks (1983) argue that CA emerges when people have a communication goal but cannot locate strategies and tactics to accomplish that goal. In this instance, some students may have the goal of minimizing interaction. Spending time alone with the computer might be a way to accomplish that goal which would keep CA low. In other words, the nonsignificant result obtained here may conceal the fact that the computer helps students avoid contact with others and in turn contains their communication apprehension. Before we conclude "there is no effect," work should be undertaken to explore this possibility.

Some possible limitations of the study should be noted. First, the sample was comprised of primarily Caucasian public school students drawn from a rural area. These sample characteristics do not allow generalization to a more culturally diverse urban population. Another consideration is that this study was conducted in the public school environment. Therefore, the data collection had to be adapted to fit the autonomy of each school. These and other limitations of the study should be taken into considered when interpreting the results of the study.

Overall, future attempts to replicate this study should incorporate the following suggestions. Foremost, more research needs to be conducted in the area of understanding the computer environment. What differences are there in computer use, from student to student? How do teachers and administrators affect the collaboration that takes place in school? One factor that appeared (via in-class observations) to determine

the amount and type of computer use is differing pedagogical styles. In short, the personal dynamics among students, along with the pedagogical styles of teachers and administrators, affect the use of computers in school. Knowing that, one might ask what other educational concepts, like curriculum, affect the amount of computer use? Furthermore, it would be interesting to conduct an analysis on how computer use affects high-level learning behaviors like application and synthesis. Does the use of computers teach students to be critical thinkers? Also, does it have any impact on leadership? Scholars should work to find the answers to these questions in an attempt to assess the full ramifications of being computerized.

In addition, there are a variety of other variables associated with computer use that might impact the development of communication skills among students. For example, does engaging in e-mail expand the students' social repertoire? Does it serve to reduce uncertainty about the world and promote language acquisition? In what ways can virtual reality be used to model real life scenarios, like giving a public speech, so that students can "practice" in the virtual world so as to be more effective in the real world? Very little research has been done to understand the potential computers have for impacting the development of communication skills.

Finally, as stated above, we need to determine whether interacting with the computer promotes CA by thwarting the development of communication skills, or if the computer offers a haven from face-to-face communication and consequently lowers CA.

Conclusion

In sum, the field of education appears to be at a crossroads in the integration of information technology. There exists a spectrum of willingness to computerize the classroom. On the one hand, there are technological enthusiasts that promote computer use because it's the way of the future. On the other hand, there are educators reluctant to utilize the available electronic tools, uncertain of what to do. In between are the majority of teachers and administrators, trying new methods that compliment traditional formats. Most critical, it seems, is to understand how students are changing in light of

technology. This study weighs on the side of technology. These data suggest that varying levels of time on the computer are not adversely related to students' communication apprehension or competence.

References

Benton Foundation, (1996). What's going on: Efforts to deliver computer networking to schools. Available: www.benton.org.

Bitter, G.G., Camuse, R.A., & Durbin, V.L. (1993). Using a microcomputer in the classroom. Boston, MA: Allyn and Bacon.

Campbell, D.T., & Stanely, J.C. (1963). Experimental and quasi-experimental designs for research of teaching. In N.L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally.

Carney, C.C. (1986). Teacher + computer = more learning. Computing Teacher, 13 (6), 12-15.

Cuban, L. (1994). The promise of the computer. In C. Huff & T. Finholt (Eds.), Social issues in computing: Putting computing in its place (pp. 522-545). New York: McGraw-Hill.

Feil, C. (1995). Your in-class communication center. Instructor, 105 (3), 60-61.

Greene, J., & Sparks, G. (1983). Explication and test of a cognitive model of communication apprehension: A new look at an old construct. Human Communication Research, 9, 349-366.

Hudas, S. (1996). Technology refusal and the organizational culture of schools. In R. Kling (Ed.) Computerization and controversy: Value conflicts and social choices (pp. 197-218). San Diego, CA: Academic Press.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Sherlis, W. (1998). Internet Paradox: A social technology that reduces social involvement and psychological well-being? American Psychologist, 1017-1031.

McCroskey, J.C. (1970). Measures of communication bound anxiety. Speech Monographs, 37, 269-277.

McCroskey, J.C. (1977). Classroom consequences of communication apprehension. Communication Education, 26, 27-33.

McCroskey, J.C. (1978). Validity of the PRCA as an index of oral communication apprehension. Communication Monographs, 45, 192-203.

McCroskey, J.C., & McCroskey, V.P. (1988). Self-report as an approach to measuring communication competence. Communication Research Reports, 5, 109-113.

O'Neil, J. (1995). Teachers and technology: potential and pitfalls. Educational Leadership, 53 (2), 10-11.

Riel, M. (1990). Cooperative learning across classrooms in learning circles. Instructional Science, 19, 445-466.

Rist, R. (1991). Introduction: Computers, clay pots, and case studies. In R. L. Blomeyer, Jr., & C.D. Martin (Eds.), Case studies in computer aided learning (pp. 1-7). Philadelphia, PA: The Falmer Press.

Schliesman, T.S. (1998). Computer use and oral communication skills among adolescents in eastern Washington schools. Unpublished doctoral dissertation, Washington State University, Pullman, Washington.

Schofield, J.W. (1995). Computers and classroom culture. Cambridge: Cambridge University Press.

Turkle, S. (1984). The second self: Computers and the human spirit. New York: Simon & Schuster.

U.S. Bureau of the Census, (1996). Statistical Abstracts of the United States: 1996. (116 edition) Washington, DC: Government Printing Office.

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Signature:	Printed Name/Position/Title: Terry Schliesman Asst. Prof WSC	
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